

Title

Illuminable Unit

Background of the Present Invention

Field of Invention

5 The present invention relates to an illuminable unit, and particularly to an improvement of a spiral-shaped fluorescent lamp.

Description of Related Arts

Conventionally, a fluorescent lamp is composed of a light tube with phosphor coating on its inner surface that contains mercury vapor therein. When the fluorescent
10 lamp is electrically excited, the mercury vapor emits ultraviolet rays shooting the phosphor coating to generate visible illumination. Under electric charge, the light tube needs to be in a certain length to achieve a predetermined brightness. Elongated, U-shaped, double-U-shaped and triple-U-shape light tubes are among the most popular shapes for the fluorescent lamp. One objective of designing the lamp is to make it
15 energy-saving and compact. A lamp that is made in spiral or double-spiral shape exemplifies the designs purposefully to achieve the objective. However, the spiral lamp has two end portions extending downwardly, thereby occupying space and rendering the lamp less compact and inconvenient in use. One of the solutions proposed to cope with the shortcoming may be found in Chinese Patent No. ZL02215188.5, entitled “dual
20 amalgam, double spiral fluorescent lamp,” wherein the disclosed lamp includes a lamp tube, from which conductors are laid out to electrically connect with a lamp base, without any end portions extended therefrom. While the disclosed lamp is compact in shape, it unavoidable complicates the manufacturing process, and increases the costs.

Summary of the Present Invention

A main object of the present invention is to provide an illuminable unit that includes a spiral light tube having two end portions and a conductor enclosure having a head portion concealed within the respective end portion of the light tube so as to
5 substantially reduce an overall height of the illuminable unit.

Another object of the present invention is to provide an illuminating unit wherein a conductor wire is abuttingly extended through the conductor enclosure within the end portion of the light tube so as to achieve a compact size for the illuminable unit.

The present invention discloses an illuminable unit for generating visible
10 illumination comprising: a cathode; a spiral-shaped light tube internally spread with a layer of phosphor coating and containing mercury source therein, the light tube having two end portions, in which the cathode terminal is disposed; a conductor enclosure with a length substantially equal to that of the end portion is formed abuttingly on the end portion and seals the same such that the end portions are formed without substantial
15 extension in presence of the conductor enclosure; and a conductor wire sealingly enters the conductor enclosure to connect with the cathode terminal, wherein the conductor wire is parallelly arranged along a longitudinal direction of the light tube for achieving a compact arrangement, whereby the mercury substance is adapted for being excited by electric power introduced via the conductor and the cathode to cause the phosphor
20 coating generating visible illumination.

These and other objectives, features, and advantages of the present invention will become apparent from the following detailed description, the accompanying drawings, and the appended claims.

Brief Description of the Drawings

FIG. 1 is a schematic view of an illuminable unit according to a preferred embodiment of the present invention.

FIG. 2 is a partially enlarged view illustrating a conductor, conductor enclosure and
5 cathode of the illuminable unit according to the above preferred embodiment of the present invention.

Detailed Description of the Preferred Embodiment

A preferred embodiment of the present invention is better explained in the following paragraphs in reference with the drawings.

Referring to Figs. 1 and 2, an illuminable unit of the present invention
5 comprises a double-spiral light tube having a spiral-shaped light body 1, 1a and two end portions downwardly extended therefrom, and a cathode terminal 3 supported at one of the end portions of the light tube.

The light tube further has a light cavity 2 containing a mercury source therein and filling with inert gas, and a phosphor layer 5 coated on an inner wall of the light tube.
10 Accordingly, the two end portions of the light tube are downwardly and parallelly extended from the light body in a vertical extending manner

A conductor enclosure 4, which has a length approximately equal to a length of the end portion of the light tube, has an upper head portion sealedly mounted within the respective end portion of the light tube in a concealed manner so as to substantially
15 reduce an overall height of said illuminable unit. Accordingly, the conductor enclosure 4 is sealed at a bottom end of the end portion of the light tube to conceal the head portion of the conductor enclosure 4 within the end portion of the light tube so as to seal the light cavity in an air tight manner. The conductor enclosure 4 further has an inner gas exhausting passage 6 communicating with the light cavity 2.

20 A conductor wire 7, 7a is electrically extended from the cathode terminal 3 to an exterior of the light tube for electrifying the mercury source while electrical connection, wherein the conductor wire 7, 7a is extended through the conductor enclosure 4 to retain said conductor wire in position within the end portion of the light tube. Accordingly, the conductor wire 7, 7a is coaxially extended with respect to the
25 portion of the light tube through the conductor enclosure 4 to electrically connect with the cathode terminal 3.

According to the preferred embodiment, the mercury source is liquid mercury contained in the light tube. Alternatively, the mercury source can be an amalgam contained in the light tube or an amalgam integral with the light tube.

5 One skilled in the art will understand that the embodiment of the present invention as shown in the drawings and described above is exemplary only and not intended to be limiting.

10 It will thus be seen that the objects of the present invention have been fully and effectively accomplished. Its embodiments have been shown and described for the purposes of illustrating the functional and structural principles of the present invention and is subject to change without departure from such principles. Therefore, this invention includes all modifications encompassed within the spirit and scope of the following claims.